

AMENDMENTS TO THE CLAIMS

1-32. (Cancelled)

33. (Currently Amended) A light emitting diode (LED) comprising:

a first gallium nitride layer;

a super lattice structure including InGaN on an $In_xGa_{1-x}N/In_yGa_{1-y}N$ multi-layer formed over the first gallium nitride layer;

an active layer on the super lattice structure including InGaN formed over the $In_xGa_{1-x}N/In_yGa_{1-y}N$ multi-layer; and

a second gallium nitride layer formed over on the active layer,

wherein the super lattice structure including InGaN $In_xGa_{1-x}N/In_yGa_{1-y}N$ multi-layer has a plurality of pits formed thereon, and

wherein a number of the plurality of pits is 50 or less per area of 5 $\mu m \times 5\mu m$.

34. (Previously Presented) The LED according to claim 33, wherein the active layer comprises an InGaN/InGaN structure of a multi-quantum well structure.

35-36. (Cancelled)

37. (Currently Amended) The LED according to claim 33, wherein the super lattice structure including InGaN includes an $In_xGa_{1-x}N/In_yGa_{1-y}N$ multi-layer is formed to have a super lattice structure.

38. (Currently Amended) The LED according to claim 33, wherein each layer of the $In_xGa_{1-x}N/In_yGa_{1-y}N$ multi-layer the super lattice structure including InGaN has a thickness of 1~3000 Å.

39. (Currently Amended) The LED according to claim 33, wherein the super lattice structure including InGaN $In_xGa_{1-x}N/In_yGa_{1-y}N$ multi-layer has a photoluminescence characteristic of a yellow band intensity/N-doped GaN intensity ratio of 0.4 or below.

40. (Currently Amended) The LED according to claim 33, wherein the active layer is directly formed on the super lattice structure including InGaN.

$In_xGa_{1-x}N/In_yGa_{1-y}N$ multi-layer

41. (Previously Presented) The LED according to claim 33, wherein the LED is blue LED.

42. (Currently Amended) A method for manufacturing a light emitting device, the method comprising the steps of:

forming a buffer layer;

forming an N-type gallium nitride layer on the buffer layer;

forming an $\text{In}_{x}\text{Ga}_{1-x}\text{N}/\text{In}_{y}\text{Ga}_{1-y}\text{N}$ multi layer above a super lattice structure including InGaN on the N-type gallium nitride layer, the $\text{In}_{x}\text{Ga}_{1-x}\text{N}/\text{In}_{y}\text{Ga}_{1-y}\text{N}$ multi layer including layers of first and second growth temperatures;

forming an active layer above on the super lattice structure including $\text{InGaN}\text{In}_{x}\text{Ga}_{1-x}\text{N}/\text{In}_{y}\text{Ga}_{1-y}\text{N}$ multi layer; and

forming a P-type gallium nitride layer above on the active layer.

wherein the active layer is grown at a temperature lower than the first and second temperatures,

wherein the super lattice structure including InGaN has a plurality of pits formed thereon and wherein a number of the plurality of pits is 50 or less per area of $5\mu\text{m} \times 5\mu\text{m}$, and

wherein the buffer layer is grown at a first temperature, and the super lattice structure is grown at a second and a third temperature higher than the first temperature, and the active layer is grown at a fourth temperature higher than the first temperature and lower than the second and third temperature.

and

wherein the $\text{In}_{x}\text{Ga}_{1-x}\text{N}/\text{In}_{y}\text{Ga}_{1-y}\text{N}$ multi layer has a plurality of pits formed thereon.

43. (Previously Presented) The method according to claim 42, wherein the active layer is grown at 600~800 °C.

44. (Previously Presented) The method according to claim 42, wherein the active layer comprises an $\text{InGaN}/\text{InGaN}$ structure of a multi-quantum well structure.

45-46. (Cancelled)

47. (Currently Amended) The method according to claim 42, wherein the super lattice structure including InGaN includes an $In_xGa_{1-x}N/In_yGa_{1-y}N$ multi-layer is formed to have a super lattice structure.

48. (Currently Amended) The method according to claim 42, wherein each layer of the super lattice structure including $InGaN/In_xGa_{1-x}N/In_yGa_{1-y}N$ multi-layer has a thickness of 1~3000 Å.

49. (Currently Amended) The method according to claim 42, wherein the super lattice structure including $InGaN/In_xGa_{1-x}N/In_yGa_{1-y}N$ multi-layer has a photoluminescence characteristic of a yellow band intensity/N-doped GaN intensity ratio of 0.4 or below.

50. (Currently Amended) The method according to claim 42, wherein the active layer is directly formed on the super lattice structure including $InGaN/In_xGa_{1-x}N/In_yGa_{1-y}N$ multi-layer.

51. (Currently Amended) A light emitting diode (LED), comprising:

a substrate;

a buffer layer on the substrate;

an undoped GaN layer on the buffer layer;

an N-type GaN layer directly formed on the undoped GaN layer;
a super lattice structure including InGaN directly on In_xGa_{1-x}N/In_yGa_{1-y}N multi-layer
directly formed on the N-type GaN layer;
an active layer directly formed on the In_xGa_{1-x}N/In_yGa_{1-y}N multi-layer on the super
lattice structure including InGaN; and
a P-type GaN layer formed on the active layer,
wherein the super lattice structure including InGaN has a plurality of pits thereon and
wherein a number of the plurality of pits is 50 or less per area of 5μm×5μm.
In_xGa_{1-x}N/In_yGa_{1-y}N multi-layer has a plurality of pits formed thereon.

52. (Previously Presented) The LED according to claim 51, further comprising:

a GaN layer between the buffer layer and the undoped GaN layer.

53. (Currently Amended) The LED according to ~~claim 53~~claim 52, wherein the undoped GaN layer is directly formed on the GaN layer.

54. (Previously Presented) The LED according to claim 51, wherein the active layer comprises:

an InGaN/InGaN structure of a multi-quantum well structure.

55. (New) The method according to claim 42, further comprising:
forming an undoped GaN layer on the buffer layer before forming the N-type gallium nitride layer.

56. (New) The method according to claim 55, wherein the undoped GaN layer is grown at a fifth temperature higher than the first temperature, the second temperature, the third temperature and the fourth temperature.

57. (New) The method according to claim 42, further comprising:
forming a plurality of pits between the active layer and the P-type gallium nitride layer.